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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,967	02/25/2002	Paul Kadlec	1074-045-PWH	3047

21034 7590 07/18/2003

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EXAMINER
NGUYEN, MICHELLE P

ART UNIT	PAPER NUMBER
2851	

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,967	KADLEC, PAUL	
	Examiner	Art Unit	
	Michelle Nguyen	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Statu

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 1 and 12 are objected to because:

(a) Claim 1 recites the limitation "a primary aperture through which primary light may be directed" in lines 3-4. This limitation is not positively claimed. Applicant may wish to change "may be" to --is--.

(b) In claim 12, line 1, "steps" should be --step--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 recites the limitation "the method of claim 14" in line 1. However, claim 14 recites the limitation "a diagnostic system" in line 1. A claim may not recite a combination of limitations directed to both an apparatus and a method. The claim language of claim 20 does not make clear whether applicant intends to further limit the apparatus of claim 14 or positively claim a method, thereby rendering claim 20 vague and indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,905,169 to Buican et al.

With regard to claim 1, Buican et al. disclose an integrated photoelastic modulator and diagnostic system comprising:

a photoelastic modulator (birefringent element 22) including an optical element (inherent to the structure of a photoelastic modulator) having a primary aperture (inherent to the structure of a photoelastic modulator) through which primary light (a polarized light component of light 33, which is reflected by polarizer 36) may be directed (see Col. 6, lines 35-7, Fig. 6); and

a diagnostic system including a diagnostic light source (light source, not shown, for generating beam 66) for directing through the optical element diagnostic light (a polarized light component of beam 66, which is reflected by mirror 40) that is distinct from the primary light (see Fig. 6). Note: Merriam-Webster's Collegiate Dictionary defines the term "diagnostic" as "serving to distinguish or identify", and the term "calibrate" as " to standardize by determining the deviation from a standard so as to ascertain the proper correction factors". Since Buican et al. teach the beam 66 to be used for wavelength calibrations, the

beam 66 is considered as constituting a part of a diagnostic system (see Col. 8, lines 24-8).

With regard to claim 2, Buican et al. teach the system of claim 1 wherein the diagnostic light source is configured so that the diagnostic light is directed through the optical element at a location remote from the primary aperture (see Fig. 6; Here the polarized light components, which are reflected by the polarizer 36 are shown as being incident on the surface of the birefringent element 22 at a first location, while the polarized light components, which are reflected by the mirror 40 are shown as being incident on the surface of the birefringent element 22 at a second location).

With regard to claim 3, Buican et al. teach the system of claim 1 wherein the photoelastic modulator is operable to provide retardance characteristics in primary light that is directed through the optical element, and wherein the diagnostic system includes processing means (computing device 54) for determining at least one retardance characteristic provided by the photoelastic modulator (see Col. 7, lines 33-7, 53-7, Fig. 6).

With regard to claim 4, Buican et al. teach the system of claim 3 including display means (display device 91) for displaying the retardance characteristic determined by the processing means (see Col. 8, lines 40-2, 61-3, Fig. 7).

With regard to claim 5, Buican et al. teach the system of claim 3 including feedback means (analyzing system 30) for converting signals representing the determined retardance characteristic into control signals for the photoelastic modulator

(see Col. 7, lines 38-57, Col. 8, lines 24-8; Here it is understood that such converting occurs for wavelength calibration.).

With regard to claim 6, Buican et al. teach the system of claim 2 wherein the photoelastic modulator is operable to provide retardance characteristics in primary light that is directed through the optical element, and wherein the diagnostic system includes processing means (computing device 54) for determining a retardance characteristic of the diagnostic light and correlating that retardance characteristic to a retardance characteristic in the primary light that is provided by the photoelastic modulator (see Col. 7, lines 33-7, 53-7, Col. 8, lines 24-8).

With regard to claim 7, Buican et al. disclose a method of operating a photoelastic modulator (birefringent element 22) that is operable for vibrating (via a transducer, which is inherent to the structure of a photoelastic modulator) an optical element (inherent to the structure of a photoelastic modulator) to impart retardance characteristics in a primary light beam (a polarized light component of light 33, which is reflected by polarizer 36) that is directed through the optical element, comprising the steps of (see Col. 6, lines 35-7, Fig. 6):

directing a diagnostic beam (a polarized light component of beam 66, which is reflected by mirror 40) of light through the optical element (see Col. 8, lines 24-8, Fig. 6; see also discussion above with respect to claim 1);

determining (via computing device 54) a retardance characteristic of the diagnostic beam of light that passes through the optical element (see Col. 7, lines 33-57, Fig. 6); and

generating a diagnostic signal (via amplifier 48) representative of that retardance characteristic (see Col. 7, lines 33-57).

With regard to claim 8, Buican et al. teach the method of claim 7 further comprising the step of converting the diagnostic signal to a verification signal that is representative of a retardance characteristic of the primary light beam (see Col. 7, lines 33-57, Col. 8, lines 24-8; Here it is understood that such converting occurs for wavelength calibration.).

With regard to claim 9, Buican et al. teach the method of claim 7 including the step of converting the diagnostic signal into a control signal for controlling the photoelastic modulator (see Col. 7, lines 38-57, Col. 8, lines 24-8, Fig. 6; Here it is understood that such converting occurs for wavelength calibration).

With regard to claim 10, Buican et al. teach the method of claim 7 including the step of transmitting the primary light beam and the diagnostic beam of light through the optical element so that the beams do not interfere with each other (see Fig. 6; Here the primary and diagnostic light beams are shown as not interfering with each other at the surface of the birefringent element 22.).

With regard to claim 11, Buican et al teach the method of claim 10 wherein the directing step includes the step of directing the diagnostic beam of light through a portion of the optical element that is spaced an offset distance from another portion of the optical element, through which other portion the primary light beam is directed (see Fig. 6; Here the polarized light components, which are reflected by the polarizer 36 are shown as being incident on the surface of the birefringent element 22 at a first location,

while the polarized light components, which are reflected by the mirror 40 are shown as being incident on the surface of the birefringent element 22 at a second location).

With regard to claim 12, Buican et al. teach the method of claim 11 including the steps of considering the offset distance and the diagnostic signal for determining a verification signal that is representative of a retardance characteristic of the primary light beam (see Col. 7, lines 33-57).

With regard to claim 13, Buican et al. teach the method of claim 10 including the step of housing (inherent to the manufacture of an optical element of a photoelastic modulator) the optical element in a manner that defines two discrete apertures through which the primary and diagnostic light beams may be directed (see Fig. 6).

With regard to claim 14, Buican et al. disclose a diagnostic system for a photoelastic modulator (birefringent element 22) that is operable for vibrating (via a transducer, which is inherent to the structure of a photoelastic modulator) an optical element (inherent to the structure of a photoelastic modulator) to impart retardance characteristics in primary light (a polarized light component of light 33, which is reflected by polarizer 36) that is transmitted through the optical element, comprising (see Col. 6, lines 35-7, Fig. 6):

> a source (source, not shown, for generating beam 66) of diagnostic light arranged to transmit diagnostic light (a polarized light component of beam 66, which is reflected by mirror 40) through the optical element (see Col. 8, lines 24-8, Fig. 6; see also discussion above with respect to claim 1);

and a detector (detector 28) for detecting at least a portion of the diagnostic light transmitted through the optical element without detecting primary light that is transmitted through the optical element (see Fig. 6).

With regard to claim 15, Buican et al. teach the system of claim 14 including mounting means (inherent to the structure shown in Fig. 6) for mounting the diagnostic system in a manner that permits simultaneous transmission of the diagnostic light and the primary light through the optical element (see Fig. 6).

With regard to claim 16, Buican et al. teach the system of claim 14 further comprising a housing (inherent to the manufacture of an optical element of a photoelastic modulator) for enclosing the optical element but for two discrete openings (see Fig. 6).

With regard to claim 17, Buican et al. teach the system of claim 14 wherein the light source includes a collimating lens (lens 32) and polarizer (polarizer 36) (see Col. 10, lines 51-6, Fig. 6).

With regard to claim18, Buican et al. teach the system of claim 14 wherein the detector includes a waveplate (plate 84) and an analyzer (polarizer 42) (see Fig. 6).

With regard to claim 19, Buican et al. teach the system of claim 1 wherein the diagnostic light source provides diagnostic light that has a wavelength other than the wavelength of the primary light (see Col. 8, lines 24-8).

With regard to claim 20, Buican et al. teach the system of claim 14 wherein the wavelength of the diagnostic beam is different from the wavelength of the primary beam (see Col. 8, lines 24-8).

Conclusion

6. The following art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 6,025,913 to Curbelo teaches digital signal processing techniques for performing multiple modulation measurements with a photoelastic modulator.

U.S. Patent No. 6,421,131 to Miller teaches a control method and system for optical monitoring of a retardance adjustment unit. This reference is not considered prior art.

International Publication Number WO 99/47966 to Buican teaches a control method and system for optical monitoring of a photoelastic modulator. This reference is not considered prior art.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Nguyen whose telephone number is 703-305-2771. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

mpn
July 16, 2003

RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
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